South Carolina
Energy Advisory Committee
May 18, 2005
(**Approved October 26, 2005**)

Attached is a list of committee members and staff in attendance.

The Energy Advisory Committee (EAC) meeting began at 1:10 p.m. The meeting was held at the USC West Quad. Public notification of this meeting was done in compliance with State law. The topics of discussion are arranged under each agenda item in the order that they occurred.

I. Introduction & Welcome

Chairman Reid greeted everyone and called the meeting to order.

II. Approval of Minutes from May 4, 2004, Meeting

Mr. Caughman asked for a correction to the minutes on Page 2, paragraph one, the last sentence. The following will be deleted: "…he feels that the software offered by Global Insight is a more powerful tool...." The sentence will read:

Based on his experience in working with a couple of languages, it is an advantage to having the program in one language.

A motion was made by Mr. Kenneth Cosgrove to approve the minutes as corrected. The motion was seconded by Mr. Bob Long and unanimously approved.

III. SC Energy Office Update

Mr. Mitch Perkins introduced two new staff members that have been hired since the last meeting. Mr. Richard Horton, who filled the vacancy left by Ms. Kate Billing, and will manage the Renewable Team. He then introduced Mr. Matthew Brady, who filled the vacancy left by Ms. Stephanie Childress.

Mr. Perkins then reported that the SC Energy Office is moving to the 4th floor of the SouthTrust Building. The move is scheduled for the end of June. The office moves, a part of larger movements by the Budget and Control Board, will result in savings of $1 million a year for the Budget and Control Board.

Mr. Perkins stated that the SC Energy Office has submitted 14 proposals for Special Projects with the Department of Energy (DOE). Last year the office received 6 projects. He said that the office should receive notification of awards in July or August. The Energy Advisory Committee will be notified prior to the next meeting of the project awards.

Chairman David Reid then asked if each member would introduce themselves to the Committee.

IV. Energy Forecasting Project

Mr. John Clark presented to the Committee a presentation on the South Carolina Energy Outlook 2005. He gave a brief history of how this model has been developed. The Office has entered a contract with Global Insight to develop the project and keep the model going. He presented historical data since 1990 and data projections for the next 20 years. He reported that the next step will be to develop alternative scenarios with this model.

The following slides were presented:

SC Population and Labor Force; SC Economy; SC Primary Consumption by Fuel Type; SC Cumulative Energy Consumption by Fuel Type; SC Energy Demand by Sector; SC Energy Efficiency; SC Residential Energy Price; SC Industrial Energy Price; SC Transportation Petroleum Price; SC Energy Expenditures; SC Residential Consumption; SC Residential Energy Efficiency Indicators; SC Residential Energy Expenditures; Vehicle Miles Traveled; SC Transportation Consumption; SC Transportation Efficiency Indicators; SC Transportation Prices; SC Transportation Energy Expenditures; SC Electricity Sales; SC Electricity Energy Efficiency Indicators; SC Electricity Prices; SC Electricity Energy Expenditures; SC Electrical Generation Capacity; SC Power Sector Emissions; SC Carbon Dioxide Emissions, All Sectors; and SC Annual Growth Rate.

The members reviewed each chart and there was a general discussion regarding the data reported and the types of data that can be generated from the software.

Mr. Clark requested that members look at the projections and data presented and get back with the staff on suggestions for forecast projections that may be useful.

Chairman Reid suggested that it would be most helpful to use footnotes on the charts in the future to assist the viewer in understanding the data. He said that Mr. David Logeman, who was unable to attend, and Mr. Bob Long has worked diligently with staff in working with the forecasting model.

The Committee briefly discussed the possibility of Duke Power building a new nuclear plant. The members talked about nuclear versus coal or gas. Mr. Jim Painter said that he feels the Legislature and the Energy Advisory Committee should encourage Duke Power to build the plant.

V. SC Energy Office Draft Strategic Plan

Ms. Chantal Fryer reported on the changes in the Draft Strategic Plan. She said that the Employee Management Performance System (EPMS)Planning Stage, which are done in January and February of each year, provide the parameters for many of the activities in the Strategic Plan. A planning process for the Strategic Plan and State Energy Plan is done after the completion of the EPMS planning stages.

The Strategic Plan is required to be completed by the 1992 Energy legislation. The Plan covers activities not only under the State Energy Plan, but, it includes activities with the Radioactive Waste Disposal Program and grant and contract activities, which are administrative in nature.

Ms. Fryer said that the Plan concentrates on six areas: Energy Efficiency and Conservation in Facilities, Transportation, Public Information, Renewable Energy and Utilities, Radioactive Waste Disposal Program and Internal Operations.

She then highlighted certain activities that the office emphasizes and will continue to promote.

In the Facilities area, Ms. Fryer stated that the office is continuing work with the Rebuild South Carolina program. This is where state agencies, school districts and some non-profits are assisted with energy efficiency retrofits. Rick Baldalf and Tom Hudkins are largely responsible for this area.

She reported that the office is continuing with the ConserFund loan program, which is the financing for the Rebuild South Carolina program.

Ms. Fryer then discussed the audit program. She reported that the office does both public sector audits and commercial and industrial audits. Energy savings for the recipient are identified and the entities are encouraged to use our funding mechanisms for implementation.

Ms. Fryer then reported that there is a web based energy accounting system called SC Saves. There are 60 state agencies, colleges and school districts signed up on this system. It is a way for them to keep track of and report their energy usage each year. This information feeds into the energy consumption report.

She also reported that the office is also working with the following:

performance contracting; encouraging energy efficient mortgage programs; and the office will be implementing a utility savings initiative for state agencies where a company will go in and look at their utility bills and analyze it for tariffs that may be wrong, and if meters are no longer being used it will be found. An RFP will be put out for this in the next couple of months through the Materials Management Office.

Ms. Fryer reported that in the area of Transportation, the Plan includes work with promoting re-fueling infrastructure; promoting alternative fuels legislation; working with the Clean Cities program; and activities on the truck stop electrification project.

She then reported that the office is very proud of the Energy Education Program, coordinated by Renee Daggerhart. Ms. Fryer said that each year the office reaches out to thousands of classrooms

across the state. There is a great deal of success with the lesson plans the children are learning about energy awareness.

She continued to go through the Draft Strategic Plan discussing the other areas. She noted that the office is encouraged by the success in the state with the Landfill Gas to Energy projects in the Renewables area. There are a number of landfills undergoing construction to get the methane gas out of the landfill. She said that Palmetto Landfill in Greenville received a Governor's Pollution Prevention Award last year and they have greater output than was originally anticipated.

Ms. Fryer briefly reviewed the other program areas and reported that Mr. Bill Newberry, Director of the Radioactive Waste Disposal Program, is responsible for garnering millions of dollars for education from the fees charged at the Barnwell nuclear waste disposal site.

The question was asked which goals or strategies, if successfully implemented, will yield the greatest net present value returns. Mr. John Clark answered that the facilities area is where most value is concentrated because results can be measured.

Mr. Clark stated that the Committee is asked to give an advisory approval to the plan. He said that this plan has less spending than last year's plan. He said that the Energy office receives no state appropriations. The office relies on three sources of money. Those sources are:

1. There is a base federal grant that goes to every State Energy Program. This is a formula grant in the amount of about $650,000;
2. Another source is the Petroleum Violation Escrow Account, a trust fund;
3. The third major category is competitive federal grants. In this area, the office is now beginning to charge administrative overhead for those grants which are administered by the Energy Office but carried out by others.

He then presented the targeted cuts to the plan. They are as follows:

Industrial/Commercial workshops – The office will charge more in the form of fees for the workshops we put on; and look for more opportunities for partnerships to put on the workshops.

Industrial/Commercial audits – There will be small cutbacks in this area and a focus on the ability to measure results.

Rewards for Higher Education Energy Efficiency (RHEEEP) program – in this program, a total of $100,000 has been cut from the budget. As previous projects associated with this program are completed, the program will be discontinued.

Home shows – Instead of participating in shows in Greenville, Charleston and Columbia, there will be one home show done, and a private contractor will not be used; it will be done in-house. This will have a savings of $26,000;

Alternative Transportation Re-fueling Infrastructure - $35,000 will be cut from this area;

Clean Cities - $75,000 less will be spent in this alternative fuel area, and hope to make it up by competitive grants;

Public Information programs - $75,000 will be cut from this program;

Solar Water Heating Demonstration Program (SWHP) - $100,000 will be cut, and the program will not no longer exist; and

The Passive Solar Home Designs Book – The office will now charge a fee for this publication and this will generate income to print more copies of the book.

He said that there will be money spent to maintain the forecasting project and he asked the Chairman to give concurrence to the Draft Strategic Plan. The plan will be used to finalize the budget and move forward with the proposal to DOE.

There were a few questions and a brief discussion regarding the SC Energy Office budget.

A motion was made by Mr. Bob Long and the motion was seconded by Mr. Gerald Caughman that the Energy Advisory Committee has received the SC Energy Office Strategic Action Plan for 2005-2006 and it concurs with the direction in that Plan. The motion carried unanimously.

VI. Response to Current Challenges

a) Truck Stop Electrification Project:

Mr. Mitch Perkins reported on the Truck Stop Electrification Project. He said that in April of 2004, the U.S. Department of Energy awarded a $1.5 million State Technologies Advanced Collaborative (STAC) grant to the SCEO for implementation of this project. The **only** project out of 11 applications to be awarded nationwide, the grant funds were to be used to install Advanced Travel Center Electrification, generally referred to as Truck Stop Electrification, at 160 truck parking spaces along the I-85 corridor in South Carolina, North Carolina, and Georgia. Truck Stop Electrification eliminates or greatly reduces the need for prolonged idling. It saves fuel, saves money, improves our national energy security, reduces the emissions of harmful air pollutants, improves the lifestyle and work environment of truck drivers, and helps reduce noise and odors associated with idling.

By mutual agreement, South Carolina Energy Office was designated as the Team Leader and was responsible for all project-related activities among and between the Team States. Each Team State identified a Project Manager, who was responsible for coordinating all project-related activities within their own state. The Team states are North Carolina, represented by the N.C. Dept. of Environment and Natural Resources, SC, represented by Div. of Air Quality; SC, DHEC, Bureau of Air Quality; and Georgia, represented by the Georgia Environmental Facilities Authority (GEFA). IdleAire Technologies Corporation based in Knoxville, Tennessee was the private sector partner in this project and IdleAire had oversight of all major technical tasks including construction and design, engineering and permitting for deployment of this advanced technology. The drivers will be able to have luxuries as: HVAC, computers communications, telephone, internet, and movies on demand.

The locations are: Petro # 29 in North Carolina; Anderson Truck Plaza; and Pilot Travel Center on 42 in Georgia. He stated that initially, the total budget for the project was over $3 million. The award to the Energy Office is $1.5 million, and IdleAire contributed close to $2 million to this project.
Mr. Perkins stated that the Energy Savings/Independence at the 3 Locations and after 3 Quarters of Operation were:

- 114,912 Gallons of Diesel Fuel Saved
- Over $230,000 at Today's Fuel Prices

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Total Economic Benefits from Project Deployment
Year 1- **$894,497**
Year 4- **$2,910,593**
Year 10- **$5,840,063**
Year 15- **$7,704,702**

Mr. Perkins explained IdleAire's corporation and how the stalls are set up at the various facilities for the customers.

There was a brief discussion following Mr. Perkins' presentation and it was noted that the first quarter's utilization of stalls was slow, less than 30%; but, over the last three quarters, utilization has risen past 60%. There was a discussion regarding the net energy savings, and Mr. Perkins agreed to research this and send the information to Mr. Caughman and others who may be interested in knowing this information.

b) Alternative Fuels:

Ms. Chantal Fryer reported on alternative fuel use in state government. She reported that compressed natural gas, E-85 and B20 fuel use combined has gone up approximately 300,000 gallons over the past 3 or 4 years. She discussed facts regarding E-85 and talked about ethanol use in South Carolina over the past 4 years.

She reported that E10 (also called gasohol) is being used around the state translating into millions of gallons of ethanol being used. Spinx Company in Greenville is selling it at 4 locations currently, and will expand to 16. Hot Spots around the state also sell E10, and she is currently working with the Department of Revenue to capture how much ethanol is being used in the state.

Ms. Fryer than gave the following facts on B20, biodiesel. She stated that it is made from vegetable oil, recycled cooking greases or oils, or animal fats. It is 20% biodiesel and 80% diesel. B20 is renewable, cleaner burning and has higher lubricity. She also stated that it can be used in all diesel vehicles with no modification. Ms. Fryer presented a chart of biodiesel use in South Carolina over the past 4 years.

She then discussed the estimated number of alternative-fueled vehicles in use and fuel type in South Carolina, as reported by the Energy Information Administration (EIA), with statistics up until 2002. She then discussed the use of alternative fuel vehicles in the Palmetto State Clean Fuel Coalition, and reported that there are over 1,200 vehicles in use.

Ms. Fryer then reported that SCE&G operates a public-access refueling facility on Flora Street in Columbia. The Central Midlands Regional Transit Authority (CMRTA) operates 7 Compressed Natural Gas (CNG) transit buses, and will add CNG trolleys and DART vehicles in future years. The City of Rock Hill operates three CNG refuse haulers and state government operates 70 CNG light-duty vehicles.

Ms. Fryer then announced the 2005 submissions for special projects in the Clean Cities category. They are as follows:

- Spinx Company requested $138,862 in federal funding to install 3 E85 sites in Anderson, Greenville and Spartanburg.

- York Technical College requested $25,191 in funding for E85 refueling infrastructure at the City of Rock Hill.

- The Department of Education requested $200,000 in funding for 2 hybrid electric school buses; and

- Catawba COG requested $20,000 in funding for the Clean Cities Coordinator Support to fund the coordinator position.

There was a brief discussion following Ms. Fryer's presentation.

c. Hydrogen Activities

Richard Horton presented an update of SCEO activity relative to Hydrogen Fuel issues.

He stated that Hydrogen (H2), as a future fuel, appears to be a very promising alternative for replacing the dwindling supply of fossil fuels, but also cautioned that the road to a hydrogen economy will be long and difficult. There are major technical and economic problems that must be solve before H2 or Fuel Cells become an everyday reality. Particularly the high cost of producing H2. Federal funding and national media exposure, for H2 research initiatives, are both growing rapidly and the SCEO is naturally becoming more involved with these activities.

Mr. Horton stated that the least expensive method of H2 production is currently through extraction from fossil fuels but stressed, that although widely used for R&D projects, this is not a sustainable process. Long term, H2 separation through the electrolyses of water with nuclear and renewable energy sources seems to be our best bet.

Richard gave a brief overview of the Energy Office initiative with USC and their Fuel Cell research grant activity. This project, managed by Dr. Tom Davis, Ph.D., centers on applied research and an educational aid for the Engineering College. This program has also been a great public awareness opportunity for the state and region. This is only one example of USC's positioning to be a leader in H2 research.

The SCEO is also partnering with the South Carolina Hydrogen Coalition (SCH2) to produce a "Hydrogen Roadmap" for South Carolina. The goal is to better position SC in the developing hydrogen economy. We believe that identifying and leveraging existing Hydrogen activity will provide a productive guide for ongoing interaction and collaboration. This study/report is due to complete 30June05.

Mr. Krause asked what amount of money is expected from the federal government as it relates to H2 use as an Alternative fuel. Mr. Horton indicated the latest round of federal funding exceeded $30 million, with most predictions that this will increase rapidly. Within the next few years, we should expect billions of dollars allocated for the development of fossil fuel alternatives, with H2 related initiatives receiving a very large share.

Mr. Horton then reviewed H2 activities by identifying South Carolina firms with current H2 activity with a brief description of the specific focus.

South Carolina Activities:

South Carolina Energy Office:

- USC Fuel Cell
- SC H2 Roadmap. SCEO/SCH2/CTC
  Goal: Position SC in the developing H2 Economy
  Identify and Leverage existing SC assets to provide additional interaction and collaboration.
- Possible DOE “Demo Fuel Cell”, 1kw, spring of 06?

Savannah River National Laboratory (SRNL)

- Premier DOE Research Facility
- Premier H2 Research Facility
- National Lab status is a BIG DEAL
- Basic Research

National Center for Hydrogen Research in Aiken County

- 50,000 ft2 H2 projects facility
- Applied Research. Private Industry/Gov Collaboration
- Thermal Chemical Combustion
- Very ambitious move for one county

South Carolina Hydrogen Coalition: SCH2

- USC, SRTC, Aiken/Edgefield EDP
- Goal is to lead in the development of the South Carolina H2 economy.

Concurrent Technologies Corporation (CTC)

- Focus: H2 Commercialization
- SC H2 Roadmap primary partner

University of South Carolina (USC)

- NSF I/U CRC: National Science Foundation I/U Cooperative Research Collaborative, Swearingen Engineering Center
- 112 acre Research Campus Development
- Research Focus: H2 storage research, Solid Hydride Technologies

Clemson University (CU)

- H2 Research
- Focus: Fibers, Fuels, Transportation
- ICAR: International Center for Automotive Research (FC/FS) BMW

BMW

- ICAR partnership with Clemson University

- Focus on ICE with H2 fuel (High Performance Auto)

GE Power Systems

- Large Utility size Generators and Gas Turbines
- Research Focus: Combined Cycle Combustion Turbine & Fuel Cell Efficiency.
- Fuel Cell / Distributed Generation using shorter grid segments.

FinnChem

- Currently flaring 1 million pounds per year of H2 bi-product.
- SCH2 interested in Transportation Demo with FinnChem and SCSU

DSM Chemical: Fort Mill, SC (Largest Ammonia Plant in US)

- Produces 400 Tons of Ammonia/day
- Potential H2 production from Ammonia

Santee Cooper

- Fuel Production.
- Potential H2 production (Methane is excellent H2 source)

Mr. Horton, at this point, introduced Dr. Davis, who provided an informative presentation on his Fuel Cell research project, and later lead a group viewing of USC's Fuel Cell located on the roof of the West Quad Learning Center.

Mr. C.P. Thomas noted several problems relative to H2 production as an alternative to fossil fuels, and stated that the SCEO should instead focus on renewable fuels such as biodiesel. He also stated that Fuel Cell using Natural Gas as a source for H2 is not a good use of government funding.

Mr. Davis responded by noting that the USC Fuel Cell used H2 reformed from Natural Gas, and agreed that this was an expensive way to produce H2; but stressed that his fuel cell is an educational tool, and NG is currently his best available source of H2.

Mr. Gerald Caughman requested information that he could read to make a judgment on H2 to determine if it is a good alternative to fossil fuel. John Clark stated that the Energy Office is working on a hydrogen component for our web site to provide basic H2 information, reports of ongoing H2 activity in South Carolina particularly, and other selective H2 information.

VII. Overview of Green Dorm

Dr. Tom Davis reported on the USC Green Dorm project and described the fuel cell that is on the building. He described the components of the residence buildings and the learning center and also explained the detailed intricacies of the fuel cell.

Comments were given from the members on the various perspectives of hydrogen and other fossil fuels.

After detailed discussions, at 3:55 PM, the Chairman made a motion to adjourn the meeting so that the Committee members would have an opportunity to enjoy a tour of the building and to see the fuel cell. This tour was led by Mr. Mike Koman.

Attachment A
Committee Members in Attendance

1. Mr. David Reid (Governor's Appointee);
2. Mr. James Clark (representing propane supplier/dealer);
3. Mr. Ken Cosgrove (representing oil supplier/dealer);
4. Mr. Bob Long (representing investor-owned gas companies);
5. Mr. James Painter (representing industrial consumers);
6. Mr. Gerald Caughman (representing individual consumer);
7. Ms. Nancy Vinson (representing environmental groups);
8. Mr. Eddie Plowden (representing Electric Cooperatives);
9. Mr. Mitch Williams (representing investor-owned electric companies);
10. Mr. Jim Cumberland (representing environmental group);
11. Mr. Derrick Huggins (representing non-profit public transportation provider);
12. Mr. C.P. Thomas (representing commercial consumer);
13. Mr. Louis Krause (representing industrial consumer);
14. Mr. George Acker (representing investor-owned electric utility).

Absent Members:

Mr. David Logeman (representing Electric Cooperatives);
Mr. Marc Tye (representing Santee Cooper);
Mr. Jim Grahl (representing commercial consumers);
Mr. Elliott Elam (Acting Consumer Advocate);
Mr. Mitch Williams (representing investor-owned electric utility); and
Mr. Kenneth Barnett (representing municipally-owned electric utilities).

Vacancy for publicly-owned natural gas.

Staff Attending:

Dr. John Clark
Mr. Mitch Perkins
Mr. Richard Horton
Ms. Chantal Fryer
Ms. D'Juana Wilson
Mr. Matthew Brady
Ms. Susan Way